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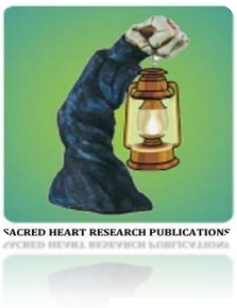

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FATAL ACCIDENTS IN INDIAN RAILWAYS: A GRAPHICAL ANALYSIS

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Abstract:

The Indian Railways is one of the premier organization and prominent among the transport system in India. It is owned and operated by the Ministry of Railways and it has got its own budget and regulatory policies. Railways are well connected all over the country operating under nine divisions. The intensive use of modern technology, installation of equipment, attitude of the people various other factors has got influence in the safety and security of railways. The passengers travelling in the trains are more perpetuated in their journey and are perplexed till they reach their destiny. Over the period of time several fatal accidents have occurred in different parts of the country. Derailment, collision, level crossing, fire accidents, causalities, suicides, animal crossing and miscellaneous are caused because of human error, equipment failure, sabotage, natural disasters. Considering the facts and occurrence of the rail accidents during 2002-03 to 2014-15 this study tries to emphasize the causes for the mishaps in Indian railways over the period of time. The analysis of the statistical data is presented in the form of tables and graphs and the corresponding interpretations are given accordingly.

Keywords: *Indian railways, rail accidents, trend analysis.*

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INTRODUCTION

From the beginning of history, human sensitivity has revealed an urge for mobility leading to a measure of Society's progress. The history of this mobility or transport is the history of civilization. For any country to develop with right momentum modern and efficient Transport as a basic infrastructure is a must. Transportation is the world's largest invisible industry. Modern society is completely dependent on Transportation to sustain its way of life, and it is all around us constantly. Yet the economics of transportation is a mystery to most people (Prentice, 2016). It studies the movement of people and goods over space and time. Historically it has been thought of as located at the intersection of microeconomics and civil engineering. However, if we think about it, traditional microeconomics is just a special case of transport economics, fixing space and time, and where the good being moved is money. Modern economics provide us with the ways we can use to solve the modern day transportation problems emerging due to high density of population as well as less area for the transport to move on (Sabharwal, 2013).

A well–knit and coordinated system of transport plays an important role in the sustained economic growth of a country. The transport system in India comprises a number of distinct modes and services, notably railways, roads, road transport, ports, inland water transport, coastal shipping, airports, and airlines. Railways and roads are the dominant means of transport carrying more than 95% of total traffic generated in the country. Although other modes such as coastal shipping and inland water transport would play a greater role, the railways and roads would continue to dominate the transport landscape in the foreseeable future.

Railways in India are known to be the most widely used means of transport. Indian Railways has sustained its development over the years. The railways have played a vital role in increasing the economy of the country. India is covered with railway tracks which are extended up to66,030 km with 11,452 locomotives, 70,737 passenger coaches and 2,77,987 freight wagons. Indian trains have carried 8.26 billion passengers, transported 1.16 billion of freight and have given employment to 1.308 million people (Sai simha, 2019). The advantage of Railway transportation is that it is reliable and does not get affected by weather conditions. It is more suitable for carrying

bulky and heavy loads over long journeys. They are known to be the only reliable source of transportation on land. Despite its feasibility, Indian Railways are more prone to accidents, which have brought a significant amount of attention upon it. The cause of accidents is one or more than one factors working together. The Railways have grown on parameters like infrastructure, expenditure and freight, however the statistics for accidents have increased exponentially that roughly one accident occurs in every 3 days. It has been concluded that the accidents are mostly because of Human errors and Equipment defects (Sai simha, 2019). Due to these Human errors and equipment errors, the rail accidents are happening.

DEFINITION

Transport (British English) or **transportation** (American English) is the movement of people and goods from one place to another. The term is derived from the Latin *trans*("across") and *portare*("to carry").

IMPORTANCEOF RAILWAYS

Transport infrastructure is one of the most important factors for a country's progress. Although India has a large and diverse transport sector with its own share of challenges, they can be overcome by energy-efficient technologies and customer focused approach one cannot overemphasize the importance of transportation than call it the 'lifeline' of a nation. It has been proven by so many instances how transport infrastructure has added speed and efficiency to a country's progress. Good physical connectivity in the urban and rural areas is essential for economic growth. India, the seventh largest nation with over a billion populations, has one of the largest transport sectors. In India, there are equal number of challenges and opportunities. Rail experts believe that the rail transport systems are six times more energy efficient than road and four times more economical. The social costs in terms of environment damage or degradation are significantly lower in rail. Rail construction costs are approximately six times lower than road for comparable levels of traffic. Historically, the Indian railways have played a leading role in carrying passengers and cargo across India's vast territory (Kohli, 2015).

ADVANTAGES OF RAILWAY TRANSPORT

The following are the main advantages of railway transport (Mehta, 2020):

- Employment
- Encouragement to Tourism
- Helpful during Calamities
- Social Importance
- Strategic Importance
- Help in Internal Trade
- Development of Agriculture
- Growth of Markets
- Mobility of Labour and Capital

DISADVANTAGES

OF RAILWAYTRANSPORT

The following are the disadvantages of Railways (Mehta, 2020):

- Railway Accidents
- Attack on Railways
- Outdated Technology
- Problem of Replacement
- Problem of laying Double Line
- Travel without Tickets
- Not Door to Door Service

RELATED STUDIES

NanjiWasnik and Ramesh in their study on" Analysis of Railway Fatalities in Central India", has stated most of the railway fatalities were accidental in nature and in the bread earning age group particularly among the males. The increasing number of population, overcrowding in the trains, reckless and careless behaviour of the passengers, pedestrians and the train drivers towards safety norms are the constant causes of railway fatalities. The high levels of the railway fatalities make a strong case for the necessary accident control interventions. Public as well as the railway authorities must take some measures to bring down these fatalities. People must follow some easy set of laws like do not travel on footboard, do not enter or get down from running trains, do not try to cross the level crossing gate when it is closed, be alert and reduce your speed while approaching railway unmanned level crossing, never guess the speed of the train and adhere to the set norms of railway safety to curb this menace (NanajiWasnik, 2010)**,**.

Gopalakrishnan in his study on "A Public Health Perspective of Road Traffic Accidents". Road traffic accidents (RTAs) have emerged as an important public health issue which needs to be tackled by a multi-disciplinary approach. The trend in RTA injuries and death is becoming alarming in countries like India. The number of fatal and disabling road accident happening is increasing day by day and is a real public health challenge for all the concerned agencies to prevent it. The approach to implement the rules and regulations

available to prevent road accidents is often ineffective and halfhearted (Gopalakrishnan, 2012).

Sabharwal and Sachin in their study on "Transportation Economics: Helping us to understand the Problem of Disequilibrium in Transportation in the Modern Cities". Transportation economics studies the movement of people and goods over space and time. Historically it has been thought of as located at the intersection of microeconomics and civil engineering. However, if we think about it, traditional microeconomics is just a special case of transport economics, fixing space and time, and where the good being moved is money (Sabharwal, 2013).

Ruikar and Manisha in their study on" National statistics of road traffic accidents in India". National reports published annually by Transport Research Wing of the Ministry of Road Transport a Highways and National Crimes Records Bureau of Ministry of Home Affairs, Government of India describe national statistical trends and normalized indicators of road accidents, injuries & fatalities. This article highlights trends, indicators, interstate comparisons and the latest characteristics of road traffic accidents in India. While the official road traffic fatality data may be close to the actual number, the injury data are gross underestimates (Ruikar, 2013).

Prentice and Barry in their study on "Concepts of Transportation Economics", Transportation is the world's largest invisible industry. Modern society is completely dependent on transportation to sustain its way of life, and it is all around us constantly. Yet the economics of transportation is a mystery to most people (Prentice, 2016).

Satish BhagwatraoAher, Deepak Raj Tiwari in their study on "Railway Disasters in India: Causes, Effects and Management". Railway Disaster at national, zonal and divisional level which provides the framework for prevention, mitigation, preparedness, rescue, relief and rehabilitation through risk identification, hazard mapping, preventive and ant sabotage security system, crowd management plans, 'Golden Hour' response, hospital disaster plan, training, technology up gradation, periodic mock drills etc. The results revealed that there are four major categories of accidents viz. derailment, level crossing accidents, collisions and fire in trains which are caused by three major factors viz. human error, equipment failure,

and sabotage (Satish Bhagwatrao Aher, 2018).

T. Mohit Kumar Moses and J. Ammaniin their study on "A Comprehensive Study of Deaths due to Railway Accidents Reported at a Tertiary Care Hospital Mortuary during the Period of January to December 2015", were concluded that most number of deaths was reported among the subjects in their 4_{th} decade of life. Most number of death occurred among males in comparison to females. In most of the cases, death occurred on the spot. In accidental cases cause of death in most of the cases is multiple injuries, followed by head injury and head injury associated with other injuries. Hence, railway fatalities can pose great challenges to the medico legal expert and investigating officer if they are investigated properly and autopsies conducted by observing everything carefully (T. Mohit Kumar Moses, 2019).

Ranabir Pal ., et.al in their study on "Public health crisis of road traffic accidents in India: Risk factor assessment and recommendations on prevention on the behalf of the Academy of Family Physicians of India", Roads are considered a sign of development bringing colossal benefits to community as socioeconomic and logistic facilitator. Yet, growth of road network has brought road crashes leading to civic pain from premature deaths of productive age group. In 2017, 16 citizens were killed and 53 injured every hour on Indian roads as per officially reported data, while a fair number go unreported. This is unacceptably high when compared with international standards. Risk correlates of road traffic injuries (RTIs) need to be redefined so as to form a continuum with other confounding factors that impact to take lives on road(Ranabir Pal, 2019)**,**.

IMPORTANCE OF THE STUDY

The rail transport mode is made more effective and efficient by the fact that it connects the most populated areas at increasingly high speeds, providing social cohesion at local level and constituting an important factor in land use planning at the national and international levels. Railways in India are known to be the most widely used means of transport. Indian Railways has sustained its development over the years. The railways have played a vital role in increasing the economy of the country. With the rapid increase in passengers, employees, other peoples and goods traffic, the frequency of train accidents is increasing very fast. Considering the facts and

occurrence of the rail accidents during 2002-03 to 2014-15 this study tries to emphasize the causes for the mishaps in Indian railways over the period of time.

STATEMENT OF THE PROBLEM

Transport plays a vital role in moving of products and passengers from one place to another. The operation involves huge amount of technological innovations and human commitment. The possibility of errors and emission are prone to occur during the operational process. Among the transport system in India Railways play a pivotal role in connecting people and places across the country. During the administration progression there are possibilities of mismanagement due to vulnerable reasons which ultimately leads to accidents and other disasters. Indian railways are not an exceptional case where accidents can be avoided or fully eliminated. Over the several decades India has witnessed much number of accidents occurring at different parts of the country. So there is a dismal need of understanding the causes, impact and management of such accidents. In lieu of this the researcher has made an attempt to study the number of accidents in Indian railways over a period of time starting from 2002-03 to 2014-15.

OBJECTIVE

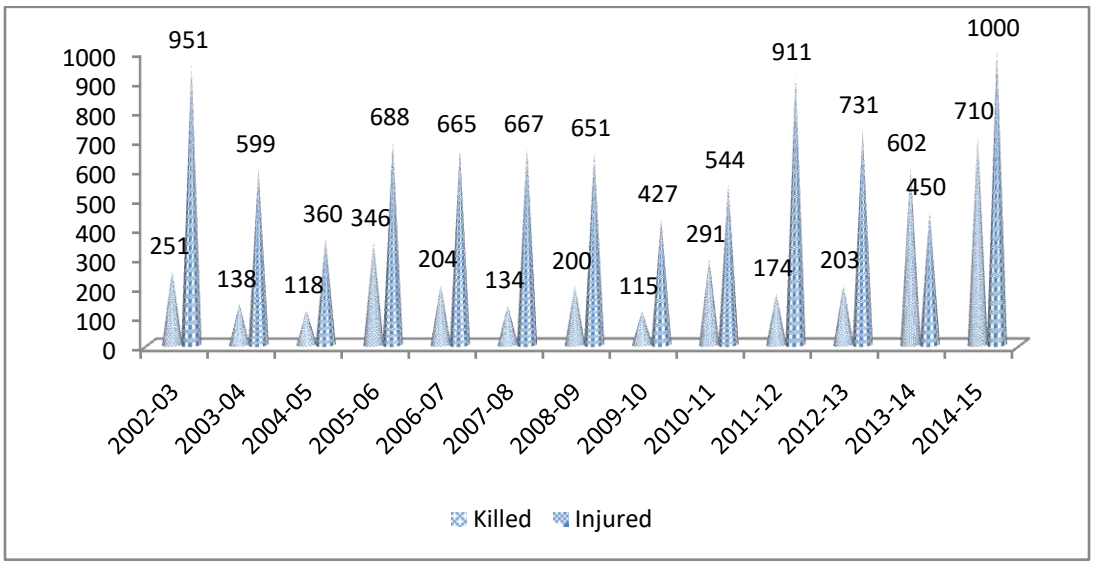
- To analyze the occurrence of railway accidents and their impact on passengers, railway employees and other people.

DATA ANALYSIS

In order to fulfill the objectives of the study, the secondary data with respect to number of railway

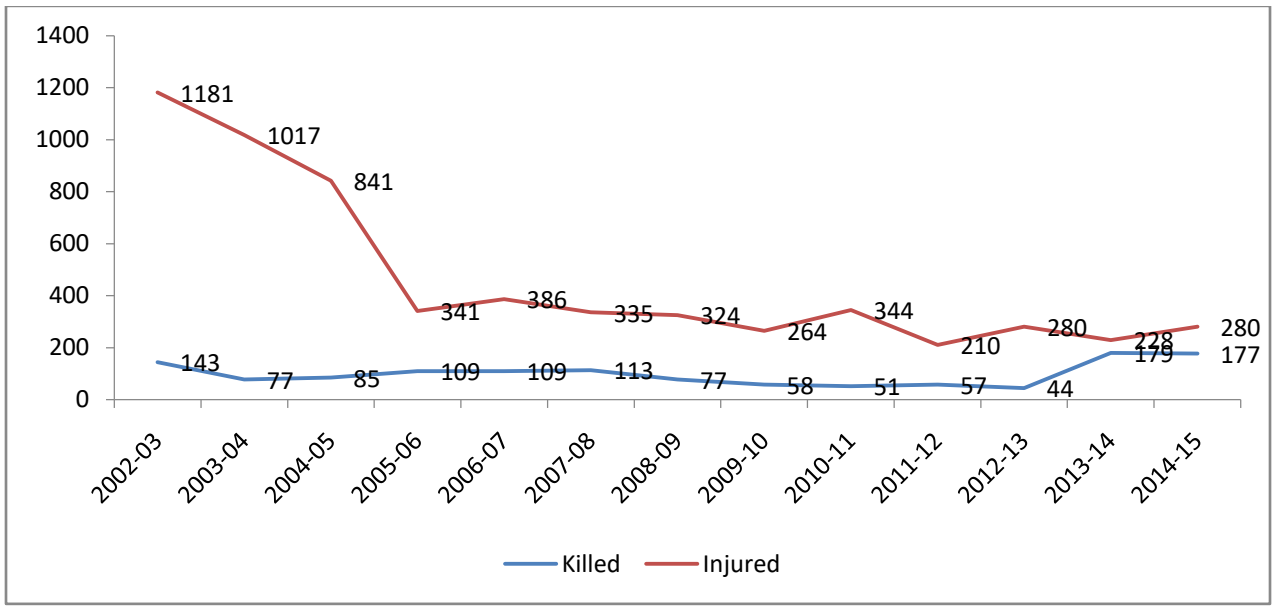
An accident, for the years (2002-2003 to 2014-2015) was obtained from Ministry of Railways (Railway Board). The compiled data was arranged and analyzed for different statistical methods in the form of tables and graphs have been presented in subsequent pages with the help of MS-Excel Software.

Figure - 1 No. of Passengers Killed and Injured During the Year 2002-2003 to 2014-2015.



Source: Ministry of Railways (Railway Board)

Figure - 2 No. of Railway Employees Killed and Injured during the Year 2002-2003 to 2014-2015.



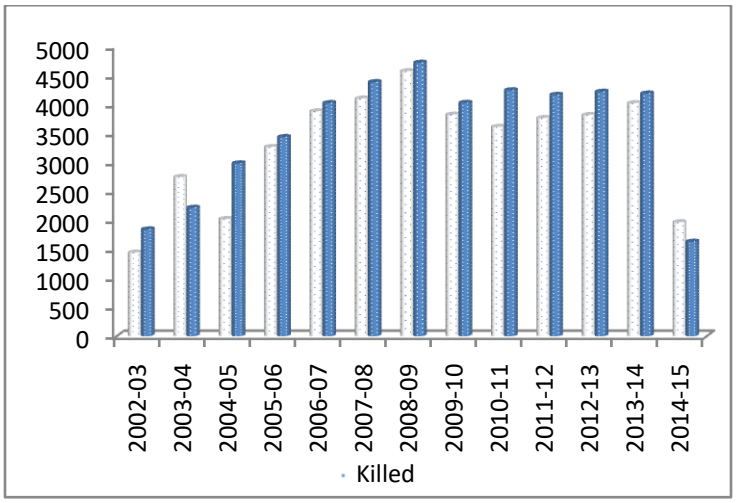
Source: Ministry of Railways (Railway Board)

The number of passengers who were killed and injured during the rail accidents since 2002-03 to 20114-15 is presented in the above graph. It is clear from the above graph that there exists oscillating occurrence of rail accidents over the study period. Reports say that many of the accidents took place in the northern parts of India. It is also noticed that many of the fast moving trains' i.e, express trains are more prone to accidents. The

causes are notified as due to fire accidents, derailment, collision with other goods train or passenger trains, bomb blast in few cases, electric circuit, track misalignment and other reasons which lead to many disasters in the Indian railways over several decades.

In the operational process the Express trains, passenger trains, goods train and other locomotives are prone to accidents. Since 2002-03 till 2005-06 the number of causalities due to rail accidents was very high because of the poor maintenance, lack of awareness about the precautionary measures, less protectionist devices, etc. But after 2005-06 the number of accidents and the number of injured people were completely reduced. This could happen because of creating more awareness among the railways employees, special training programme, careful maintenance, appropriate use of technology has remarkable reduced the number of fatalities. In later years the graph shows an oscillating picture of number of people killed and injured in rail accidents.

Table -3 No of Other Persons Killed and Injured During the Year 2002-2003 to 2014-2015.



Source: Ministry of Railways (Railway Board)

The major concern for the railway department is that more number of common people is much affected due to the rail accidents. Many people commit suicides and run into the moving trains and end their lives, accidents happening at the level crossing, people die while crossing the track at time of reaching their houses, rearing animals, fetching water, etc. The employees at the level crossing gate because of their negligence, carelessness, and slackness accidents are prone to happen. Thousands and thousands of people have died because of rail accidents. It is also clear that in later part of the years the number of deceased have reduced to greater extent. Some special

cases like animals are bound to accidents like elephants while crossing the railway track are caught and they get killed or injured. Cows, goats, dogs and other domestic animals are also victims of rail accidents.

Conclusion

The Government of India, Ministry of Railways need to pay more attention in the lacunas in their operational system and try to fill the gap with appropriate measures. Both the employees and the common people should be educated and make them to follow the guidelines properly. On the other hand proper maintenance of rail tracks, signals, engines, wagons and other devices in a good condition. When such measures are implemented by the government and also when people are ready to adopt the right procedure the fatalities can be reduced and we can help the railways to serve better.

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